

4. SPECIAL PROJECTS AND REPORTS

A. Marine Pollution by Cruise Ships (GAO)

The U.S. General Accounting Office (GAO) has published a report (GAO/RCED-00-48) dated February 2000 and titled *Marine Pollution: Progress Made to Reduce Marine Pollution by Cruise Ships, but Important Issues Remain*. The report focuses on the following specific issues: (1) the nature and extent of reported illegal discharge cases for foreign-flagged cruise ships from 1993 through 1998; (2) the efforts of relevant federal agencies to prevent, detect, investigate, and prosecute illegal discharges from foreign-flagged cruise ships; (3) the actions taken by cruise ship companies with proven illegal discharge violations to prevent future illegal discharges; and (4) the views of relevant federal agencies and third-party interest groups regarding the actions that cruise ship companies have taken, and what issues, if any, require further attention.

Federal data indicate that foreign-flagged cruise ships were involved in 87 confirmed illegal discharge cases in U.S. waters from 1993 through 1998. Overall, the number of confirmed illegal discharge cases by cruise ships in U.S. waters generally declined during this period. Oil or related chemicals were discharged in 81 cases; 6 cases involved discharges of garbage or plastic. GAO determined that about three-fourths of these cases were accidental, resulting from human or mechanical error, while the remainder were either intentional or their cause could not be determined from the available information. A few of the 87 cases involved multiple illegal discharge incidents that, according to the U.S. Department of Justice, numbered in the hundreds over the 6-year period. In addition to the 87 confirmed cases, 17 other alleged incidents were referred to the countries where the cruise ships were registered because the incidents occurred outside U.S. waters or because jurisdiction could not be clearly ascertained. Both large and small cruise ship companies were involved in illegal discharge cases.

The U.S. Coast Guard, the Department of Justice, and, to a lesser extent, other agencies undertake a variety of efforts to prevent, detect, investigate, or prosecute illegal marine discharges by foreign-flagged cruise ships. The Coast Guard inspects ships in port, watches them as part of aircraft surveillance in the open sea, investigates reported incidents, and, if warranted, adjudicates cases under its civil penalty procedures. However, the Coast Guard's ability to detect and resolve violations is constrained by the narrow scope of its routine inspections, a significant reduction in aircraft surveillance for marine pollution purposes, and a breakdown of the process for identifying and resolving alleged violations referred to flag states. Both the Coast Guard and the Department of Justice have been involved in these pollution cases, with Justice prosecuting the most serious offenses. Civil penalties levied from 1993 through 1998 against cruise ship companies by the Coast Guard ranged from a warning with no penalty to a \$17,500 penalty; Justice's criminal penalties against cruise ship companies ranged from \$75,000 to \$18 million. In addition, federal agencies have implemented or partially implemented a number of recommendations made by GAO and others to improve the coordination of enforcement, data sharing, and other efforts among relevant agencies.

GAO spoke with representatives from 9 cruise ship companies responsible for ships involved in nonaccidental pollution cases, as well as from 3 additional companies (involved in accidental

cases) that represent a large segment of the cruise ship industry. These 12 companies have implemented new or updated environmental plans designed to enhance ship safety and prevent pollution. The plans, which were prepared pursuant to new international standards of the International Maritime Organization (IMO) or were mandated by U.S. district courts after the companies pled guilty to pollution violations, call for such steps as regular third-party verification of ships' compliance with environmental procedures. Among the 12 companies, the 8 that operate relatively large fleets of ships have taken additional steps to reduce the amounts of plastics and other potential wastes brought onboard, as well as to install incinerators and additional equipment for treating or storing solid wastes, hazardous wastes, and oily bilgewater. Officials from the four smaller companies said they have not had to take these additional steps because their ships are away from port only 5 to 7 hours daily and have space onboard to store wastes until the ships return to port.

Officials from the Coast Guard, the Department of Justice, and the Center for Marine Conservation (a nongovernmental, science-based advocacy, research, and public education organization that monitors marine pollution issues) said that cruise ship companies were making progress toward changing a maritime culture that once permitted discharges of garbage and oil from ships before international standards and U.S. laws to control such discharges were adopted. They pointed out, however, that cruise ship companies must demonstrate a sustained commitment to eliminate illegal discharges at sea. Some officials expressed concern about the large volume of wastewater from sinks, showers, drains, and sewage systems that cruise ships legally discharge at sea and the possible effects of these discharges on sensitive marine life.

For further information, contact Dr. Gerald Dillingham, Associate Director, Transportation Issues, U.S. General Accounting Office, 441 G Street, NW, Washington, DC 20548, (phone: (202) 512-2834).

B. Sea-Level Rise and Global Climate Change (Pew Center)

The Pew Center on Global Climate Change released a report during February 2000 titled *Sea-Level Rise and Global Climate Change: A Review of Impacts to U.S. Coasts*. According to the report, climate change is likely to accelerate the historical rise in sea level through warming of oceans and melting of ice, which in turn will affect coastal development, wetland resources, and recreation along U.S. coasts. The impacts of sea-level rise will occur in coastal areas that are continually evolving and already face a wide range of natural and human-induced stresses, including erosion, storms, land subsidence, wetland loss, and environmental degradation from recreation and development pressures. Responses to sea-level rise at the national, state, and local level must therefore reflect an understanding of the complex interactions of human and ecological systems in coastal areas. This report reviews the state of understanding of the impacts of sea-level rise on U.S. coasts.

Impact assessment of sea-level rise requires careful assessment of local conditions, the magnitude and uncertainties of global sea-level rise, and the costs and feasibility of response options. Important local conditions include coastal topography, geology, and economic and demographic factors. The areas in the United States most vulnerable to sea-level rise are in the

mid-Atlantic and south-Atlantic states (because of low-lying topography, high economic value, and relatively high storm frequency) and along the Gulf Coast (because of low-lying topography and rapid land subsidence). Parts of New England are also at risk, particularly coastal islands in southern New England. The West Coast is generally at lower risk, with the exception of San Francisco Bay and Puget Sound.

The Intergovernmental Panel on Climate Change (IPCC) in 1996 concluded that increases in global temperatures over the next century could accelerate the historical rate of global mean sea-level rise from 1 to 2.5 millimeters per year to about 5 millimeters per year (50 centimeters per century), with an uncertainty range of 2 to 9 millimeters per year. More recent work using new greenhouse gas emissions scenarios shows a slightly higher rate of sea-level rise.

The impacts of sea-level rise will vary by location and depend on a range of biophysical characteristics and socioeconomic factors, including human response. The primary impacts of sea-level rise are physical changes to the environment. These changes, in turn, affect human uses of the coast such as tourism, settlement, shipping, commercial and recreational fishing, agriculture, and wildlife viewing. The most serious physical impacts of gradual sea-level rise on coastal lowlands are: (1) inundation and displacement of wetlands and lowlands; (2) coastal erosion; (3) increased vulnerability to coastal storm damage and flooding; and (4) salinization of surface water and groundwater.

Three options have been proposed to respond to coastal threats: planned retreat, accommodation, and protection. Impact and adaptation assessments evaluate where these responses might be implemented and then calculate the costs of implementation and the damages to resources that are not protected. Generally, property losses or the costs to protect property dominate the existing impact estimates for the United States. The implications of lost wetlands, which are not reflected in most current impact estimates, could also be significant. Based on a review of the existing literature, estimates of the cumulative impacts of a 50-centimeter sea-level rise by 2100 on coastal property range from about \$20 billion to \$150 billion. Estimates at the low end of the range reflect modeling of the most economically efficient adaptation to sea-level rise. Those estimates at the high end reflect assessments of vulnerability or protection costs, and assume that all currently developed vulnerable areas will be protected, regardless of costs.

In many cases, the impacts of sea-level rise could be mitigated by forward-looking state or local land-use policies. The major challenges of future impact assessments include improving their comprehensiveness and accuracy and making their results more accessible and useful to state and local decision-makers who are most able to prepare coastal areas to respond to the threat of sea-level rise.

For further information, contact the Pew Center on Global Climate Change, 2101 Wilson Boulevard, Suite 550, Arlington, VA 22201, (phone: (703) 516-4146).

C. Site Investigation Requirements for Dredging Works (PIANC)

The International Navigation Association (PIANC) has published a report (ISBN 2-87223-113-7) titled *Site Investigation Requirements for Dredging Works*. According to this report, dredging works are major operations that are often complex and costly. They may account for a substantial proportion of the cost of maritime projects. Effective planning and execution of dredging works require knowledge about the material to be dredged and the environmental conditions in which the dredging plant will operate. The high mobilization and capital costs of the dredging plant mean that the wrong assessment of basic ground and environmental parameters and consequent selection of unsuitable plant and methods may lead to substantial economic losses. Appropriate ground and environmental surveys are fundamental to the success of dredging operations, from both technical and economic points of view. It is in the interests of both contractor and employer to obtain a full understanding of ground and environmental conditions at the site, in order to ensure the smooth progress of the works and avoid claims and disputes.

The survey techniques applicable to the marine environment are different from those applicable on land. The difficulty of working (sometimes in poor conditions), the cost of the specialized techniques that are required, and the often large areas that need to be investigated for dredging projects probably explain why investigations for dredging works are sometimes inadequate.

Surveys should be based on a preliminary study of existing geological and environmental data against a background of a preliminary design of what is proposed to be dredged. The study should lead to an overall appreciation of the site and provide a focus on the difficulties likely to be encountered in the course of the works, the types of data that need to be collected, and the areas and depths to be investigated. The field investigations are likely to include one or more of the following: (1) bathymetric surveys to define water depths in and around the dredging and disposal sites; (2) geophysical investigations to identify obstacles on or under the seabed (shipwrecks, pipelines, debris, etc.); (3) geophysical and geotechnical investigations of the bed to identify the types of soil and rock to be dredged, and to define their physical and mechanical properties; and (4) investigation of the environmental conditions (hydraulic, meteorological, etc.) that affect dredging operations.

Dredging methods and disposal of dredged materials also may be influenced by contamination of the materials being dredged. The investigation of the extent and degree of contamination is not addressed in this report, but attention is drawn to this possibility.

For further information, contact the PIANC General Secretariat, Graaf de Ferraris-gebouw – 11th floor, Boulevard du Roi Albert II 20, Box 3, B-1000 Brussels, Belgium.

D. Scrapping Obsolete Vessels (OIG/DOT)

The Office of Inspector General (OIG), U.S. Department of Transportation (DOT), has issued a report (MA-2000-067) dated March 10, 2000, and titled *Report on the Program for Scrapping Obsolete Vessels*. This report presents the results of the OIG audit of the program for scrapping

obsolete vessels controlled by DOT's Maritime Administration (MARAD). The objectives of this review were to evaluate MARAD's progress in meeting its legislative mandate to dispose of obsolete vessels in the National Defense Reserve Fleet (NDRF) by September 30, 2001; identify what action MARAD has taken toward meeting the mandate; and identify potential alternatives to assist MARAD in achieving its goals.

The Merchant Ship Sales Act of 1946 created the NDRF, a U.S. government-owned and administered fleet of inactive, but potentially useful, merchant and nonmilitary vessels to meet shipping requirements during national emergencies. MARAD administers the NDRF, and the Department of Defense (DOD) provides the funding to maintain the Fleet. The Federal Property and Administrative Services Act gave MARAD the responsibility of disposing of all federal government merchant-type vessels of 1,500 gross tons or more. The National Maritime Heritage Act of 1994 requires MARAD to dispose of obsolete vessels in the NDRF by September 30, 2001, in a manner that maximizes financial return to the United States.

As of February 29, 2000, 110 vessels were designated for disposal because the majority of them are no longer operational. Eighty-eight of the 110 vessels are slated for scrapping. The remaining 22 vessels will be disposed of through the fish reef program, used by a state or federal agency, or held for useful parts and equipment. With the exception of 2 vessels, MARAD maintains these inactive vessels slated for disposal at the James River Reserve Fleet, Ft. Eustis, Virginia; the Beaumont Reserve Fleet, Beaumont, Texas; and the Suisun Bay Reserve Fleet, Benecia, California. Two vessels are held by the Coast Guard in Mobile, Alabama. MARAD expects its inventory of obsolete vessels awaiting priority disposal will increase to 152 by the end of fiscal year 2001 because of additional vessel transfers from the U.S. Navy, downgrades of other NDRF vessels to obsolete status, and the inability to sell ships for scrap.

Environmental dangers associated with MARAD's old, deteriorating ships are increasing daily. These vessels are literally rotting and disintegrating as they await disposal. Some vessels have deteriorated to a point where a hammer can penetrate their hulls. They contain hazardous substances such as asbestos and solid and liquid polychlorinated biphenyls (PCBs). If oil from these vessels were to enter the water, immediate federal and state action would be required.

According to the report, DOT, the Administration, and the Congress face a challenge in determining how to dispose of MARAD's Fleet of environmentally dangerous vessels in a timely manner. MARAD will not achieve the legislative mandate to dispose of its obsolete vessels by 2001 nor will the disposals yield financial benefits to the United States. MARAD will need relief from these requirements. The current approach of selling obsolete vessels for domestic scrapping is not likely to work in today's marketplace. There is limited domestic scrapping capacity, and, by law, MARAD is prohibited from paying for scrapping services. It cannot, therefore, compete with a Navy pilot project, which pays contractors for scrapping obsolete vessels. Further, MARAD is constrained from selling vessels overseas for scrapping, although this had been a key market in the past. The longer the vessels are in MARAD's Fleet awaiting disposal, the more the environmental risks increase. MARAD will need authorization and funding for a program to pay for the disposal of vessels if it is to have the potential to significantly reduce the number of obsolete vessels in the NDRF.

The report's recommendations to the Maritime Administrator are as follows: (1) seek legislative approval to extend the 2001 mandate for disposing of obsolete vessels and to eliminate the requirement that MARAD maximize financial returns on the sale of its obsolete vessels; (2) continue to pursue programs to improve scrapping sales, and identify alternative disposal methods that can contribute to the goal of reducing the number of obsolete vessels awaiting disposal, including working with the U.S. Navy on the results of its studies on the environmental impact of sunken vessels; and (3) develop a proposal for submission to Congress seeking approval and funding for a project to pay contractors for vessel scrapping. The proposal to Congress should include a plan to target the 40 "worst condition" vessels first, identify funding and staffing requirements, and provide milestone dates to dispose of all obsolete vessels.

For further information, contact Ms. Alexis M. Stefani, Assistant Inspector General for Auditing, Office of Inspector General, U.S. Department of Transportation, 400 Seventh Street, SW, Washington, DC 20590, (phone: (202) 366-1992).

E. Single-Hull Oil Vessels (GAO)

The U.S. General Accounting Office (GAO) has published a report (GAO/RCED-00-80) dated April 2000 and titled *Maritime Industry: As U.S. Single-Hull Oil Vessels Are Eliminated, Few Double-Hull Vessels May Replace Them*. According to the report, the U.S. Coast Guard's approach for implementing the Oil Pollution Act's phase-out requirements relies on inspectors at individual ports to: (1) identify single-hull vessels subject to the Act's requirements; (2) use the Act's phase-out schedule to establish a deadline for the vessel; and (3) ensure that vessels are not being used for transporting oil after the deadline has passed. Inspectors monitor these vessels as part of their existing inspection and boarding activities. If the Coast Guard were to find a vessel is still being used to transport oil beyond its phase-out date, it has authority to require the vessel to cease operation, revoke its certificate, and potentially levy a civil penalty against the owner or operator. So far, no instances of noncompliance have been identified.

The 22 domestic shipping companies GAO contacted that own single-hull oil vessels stated that they have only limited plans to replace or convert these vessels. Most said they would simply take their vessels out of service when their phase-out deadlines occurred and would take a "wait and see" approach to making replacements in the future. The industry currently has more vessels than needed to meet the current shipping demand, and vessel owners said the rates they receive for shipping oil products are currently not high enough to justify investing in replacements for the future. After taking into account available double-hull capacity and the limited amount of planned double-hull replacements, the phase-out of single-hull vessels will on balance cut total carrying capacity by about 1.9 million gross tons by the end of 2005, assuming no major changes in industry replacement plans. Decisions by ship owners to make only limited replacements will probably have little effect on the ability to meet demand over the next few years, because the available supply of U.S.-built vessels is still expected to be greater than demand for their services. Beyond the next few years, however, the potential effect of limited replacement is less certain. Shipping company officials, along with oil company officials that GAO contacted, said that if enough U.S.-built vessels could not be found to move oil between U.S. ports, their most likely alternatives would be to import oil products from foreign ports using non-U.S. ships or to

make greater use of domestic pipelines. Two parts of the country – New England and Florida – are not served by pipelines; however, both regions are served extensively by tank barges and U.S. and non-U.S. tankers.

For further information, contact Mr. John H. Anderson, Director of Transportation Issues, U.S. General Accounting Office, 441 G Street, NW, Washington, DC 20548, (phone: (202) 512-2834).